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Northerners hot on development

by Michael Sharpe

Until fairly recently most Canadians knew little about our "frozen wastes" to the north. We tended to think of a remote, forbidding and hostile environment just waiting for the technology to exploit it. The Northwest Territories and the Yukon were for the longest time administered by a remote and unfamiliar bureaucracy to the south which could rarely be counted upon to respect and understand the needs and hopes of the people who lived there. Even now, the N.W.T. and Yukon do not control their own resources. The land itself is still crown land administered by the federal government, while the native peoples are struggling to hold on to some sort of control of the land which they have inhabited for so long.

As any northerner can tell you, things are changing fast. In the past, development of resources such as minerals, oil and gas were planned from the south and there was no real overall plan for the long term. Industries came and went in a boom and bust cycle which was very disruptive to the social fabric and, more often than not, paid little heed to the environment. The Inuit were rarely consulted about proposed developments and just tended to get swept along by the tide of incoming changes.

Recently, the situation has evolved on several fronts and the north is developing very quickly in a number of ways. First of all, there has been very rapid political development through which control over the future of the north is slowly being transferred to the people of the north themselves. In addition to this, there has been tremendous growth in the use of scientific research in many areas to help northerners make intelligent, long term plans for the management of their resources both renewable and non-renewable.

Probably the most important development along these lines has been the adoption of the environmental impact assessment and review process. Here experts from numerous fields, from ethnohistorians to marine biologists, get together and attempt to determine the likely impact of a development plan on the natural environment and the local inhabitants.

The best known and most successful example of this to date is the MacKenzie Valley Pipeline Enquiry carried out by Justice Thomas Berger. After several years of detailed study of the environment and numerous interviews and meetings with native groups,

the report concluded that a pipeline of the sort proposed would likely cause unacceptable disruption to the wildlife, environment and the local people and so a moratorium was proposed. The proposal was accepted and as a result, a very large industrial project

interests of the public with regards to the management of resources in the arctic. The C.A.R.C. is involved in all of the major impact assessment processes and more than once has been instrumental in preventing ill planned developments from proceeding.



was stopped dead in its tracks.

This was a significant victory for the native groups and for all those people and interest groups which are opposed to economically marginal and ecologically unsound industrial projects.

Another encouraging trend in recent years has been the emergence of well organized and very vocal public interest groups such as the Canadian Arctic Resources Committee. The C.A.R.C. is a publicly funded watchdog organization which is dedicated to ensuring that government and industry act in the best

A perfect case in point was Gulf Canada Resources Inc.'s application to DIAND for permission to build a marine base at Stokes Point on the north slope of the Yukon where the corporation planned to service their Beaufort Sea drill rigs and ships. DIAND went ahead and gave permission in principle for the development despite the fact that the land had been set aside as an ecological reserve several years before. Due to the quick action of the C.A.R.C., the development was stopped, and this ecologically sensitive and unique area is now safe again. Had the project gone ahead, local marine mammal

populations as well as migrating caribou and sea birds might have been greatly disturbed.

Until the government develops a comprehensive and well planned resource management plan for the north, groups like the C.A.R.C. will continue to play a valuable role in this important area. In fact, it is most likely that the need for such organizations will probably never disappear.

The federal government is now committed to the eventual transfer of control of resources to the territories, just as it is committed to the transfer of political control. The Northwest Territories have already made a move in this direction by establishing the Science Institute of the N.W.T. The purpose of this institute will be to "assess the scientific, engineering and technological resources, requirements and potential of the Territories against the need for scientific, engineering and technological advice required by the legislative assembly to help solve the social and economic problems of the people of the Territories...". This group will help to ensure that research efforts are focused on important areas and that priorities are determined locally rather than by a distant, federal department.

A complaint which the people of the north have often made regarding scientific research in the arctic, is that there has been little attempt in the past on the part of the researchers to consult them about it or to explain to them the reasons for or the application of the research.

Fortunately this is changing as well. Increasingly, government funding agencies in the north are requiring researchers to make the attempt to contact local communities, discuss their research proposals and answer their questions. In addition, they are encouraged, where possible, to hire northerners as field assistants in the hope that this will encourage some to go one step further and pursue studies in the field themselves.

The Prince of Wales Heritage Centre in Yellowknife has had a program for several years in which young people from all across the arctic work as field assistants on archaeological digs. The students gain valuable field experience, learn a great deal about the prehistory of the arctic and are instructed in archaeological field methods.

Perhaps the next step in the development should be the establishment of educational institutions in the north where northerners can obtain university level education without having to "go out" to the south. Science in the north, for the north.

Developing nations farm the aquatic harvest

by Cameron D. Eckert

The greatest impact of modern technology has been population growth. Where the control of death has preceded the control of birth the results have been drastic population growth with the associated problems of disease, poor living conditions, societal inequality and famine. This has been the case in many developing countries where change to alleviate the problem has been slow to come. It is easier to persuade one who is sick to take medication than it is to persuade one who is hungry to break away from traditional farming methods to something that is unfamiliar.

In 1965 an attempt was made to change this situation. New agricultural techniques based on high yield varieties of seeds, mainly wheat and rice, were introduced in numerous developing countries. India, in particular, was the focus of large scale projects in what was envisioned to be a green revolution. Initially the returns from these high yield varieties were good and many farmers were persuaded to change over from their more traditional crops.

Problems were not far off. To succeed these strains, which were poorly suited to local conditions, needed reliable irrigation, chemical fertilizers and insecticides. With the associated high cost of these new techniques only the more wealthy farmers were able to profit allowing them to buy out the less fortunate farmers. When climatic conditions deteriorated and the energy crisis arose after 1973 many of the farmers who had become dependant on these high yield varieties were ruined. The costs were simply too high and the crops were too vulnerable to adverse fluctuations in weather conditions.

Scientists have since had to change their approach regarding the introduction of agricultural technology in developing nations. Western agriculturalists cannot hope to introduce strains, developed on carefully controlled fields in Ohio, to nations that have completely different local conditions.

Presently many agricultural scientists are concerned with the development of agricultural technology that is specifically suited for the climate, physical nature and resource potential of a particular region. Re-

cent research in Aquaculture reflects this concern.

Aquaculture is the "organised culture or cultivation of useful aquatic animals and plants in enclosed water bodies," that is, aquatic farming. Many different species are presently being farmed in numerous countries; trout and salmon in Canada, shrimp, milkfish and four species of carp in India, Nepal and Indonesia. Most scientists presently feel that aquaculture production is a fraction of what is now possible.

Aquaculture as a means of feeding an expanding population is not a new idea. Attempts were made in India in the early 50's and into the 60's although they failed as none of the projects established experienced or trained individuals to perpetuate the effort. This was due to the scientists' and administrators' inability to deal with the socioeconomic and political aspects of the

so called "technology transfer". As had happened with their terrestrial counterparts the aquaculturists realized that development strategies must be specifically suited for each country's rural development objectives with respect to the socioeconomic and political characteristics of a region.

Training programs for the rural poor and marginal farmer/fishermen are needed for an effective development plan. A "technology transfer" is not enough.

There are two basic approaches regarding the implementation of aquaculture technology in developing areas. Firstly the projects may be small and on the subsistence level, designed to meet local needs. Alternatively large scale, commercially oriented industry revolving around expensive species suitable for export may be

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Focus on:
Science and development

Ads may be placed through the Daily, Room B03, Student Union Building, 9 a.m. to 3 p.m. Deadline is 2:00 p.m. two weekdays prior to publication.
McGill students: \$2.50 per day; for 3 consecutive days, \$2.00 per day; more than 3 days, \$1.75 per day. McGill faculty and staff: \$3.50 per day. All others: \$4.00 per day. *Exact change only, please.*
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341 — APTS., ROOMS, HOUSING

Horribly cramped 6 room office. Bad ventilation, many smokers (none of whom use ashtrays), assorted vermin, hideous

biological and chemical odours, no bathroom. Come down to Union B-03 and join the Daily, a nuclear-free zone...

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McGill University VICE-PRINCIPAL Montreal (Academic)

The first five-year term of the Vice-Principal (Academic), Dr. S. O. Freedman, will end on May 31, 1986. Whether or not the incumbent will consider a second term, university policy requires a comprehensive review of the position at this time. An Advisory Committee for this purpose has been established and now invites comments about the post, nominations or applications.

The Vice-Principal (Academic) has overall responsibility for the Faculties of Agriculture, Arts, Dentistry, Education, Engineering, Law, Management, Medicine, Music, Religious Studies, Science, Graduate Studies, the Libraries, Office of the Dean of Students, Instructional Communications Centre, Registrar's Office, Admissions Office and Information, and Liason Office. Candidates should have appropriate scholarly and administrative experience; facility in both English and French is desirable.

Comments about the post, nominations and applications are invited. These should be addressed to:

Principal D. L. Johnston, F. Cyril James Building, preferably before November 11, 1985.

classifieds

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An opportunity exists as of January 1986 for a B. Sc. Computer Science graduate to train with a small firm of marine consultants located in Old Montréal.

The applicants should have experience with IBM PCs and high level languages including BASIC, as well as being capable of initiating and developing, within specific requirements, a range of complex software, and interest in world geography and the ability to function in French would also be definite assets.

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There are more parasites in a human body than people in the world.
a strange fact from National Geographic

the McGill Daily

75th year of publication

A tail of two referenda: MSS and CFRM

Today and tomorrow, most McGill students will probably *not* vote on two McGill Student Society (MSS) referenda questions. Most will forfeit their right to decide whether they should contribute a further \$10 per year to both pay off the MSS debt and allow Radio McGill broadcasts to reach all FM receivers.

The decision will be taken by those who do vote. There is no quorum requirement that would invalidate a low turn-out. And students who are unhappy with the decision, but too lazy to vote, will have no cause to bitch.

Granted, students are preoccupied with academics and personal problems. Some really don't care whether or not they pay \$10 more. Others feel insulted by the Pepsi-generation/Commando campaign pitch. But it is in the interest of most students to vote.

Q: Should we pay more?

First, should students fork over an extra \$8 per year to the MSS to pay off a debt that was created by past councils? The argument in favor of the hike is that the Administration will start charging 10 per cent interest on the \$800,000 debt, as threatened by McGill's VP Finance John Armour. The longer it takes to pay off the debt, the more it costs — the MSS says half a million at the current rate of repayment.

The assumption here is that MSS expenditures should not be cut, and so the fee hike is legitimate. Currently MSS fees stand at \$45 per year for full-time students and somewhat less for others, for an annual budget of some \$3 million per year. Some services make money, such as the cafeterias, Gertrudes' Pub, and the bank machine. Others cost money, including the Union Building maintenance, staff salaries, special programmes, clubs, and honoraria.

A short history of the debt

McGill's Administration seized control of MSS in 1974 after amassed a massive operating deficit. The Administration rewrote the Students' Society constitution, paving the way for increased control over the MSS. MSS was saddled with three executives whose salaries total over \$100,000 per year. The Administration also encouraged MSS to expand its business operations. Most of the new vending operations and new cafeterias lost a lot of money until recently. Yet, MSS kept spending more and more money on the 'business operations,' racking up a capital deficit without making inroads into paying off its outstanding operating deficit. What austerity measures were taken, occurred at the level of club funding.

MSS kept asking for more interest-free loans from the University. And nearly 10 years later, the MSS found itself with a huge debt to the University.

In the academic year 1983-84, MSS decided it had to get rid of its debt. It held two fee increase referenda in quick succession, the second of which raised fees by \$18 a year. Yet, a look at this year's MSS financial statements will show you that the debt actually increased after the fee hike. Clubs were cut more. Unnecessary cosmetic renovations went ahead.

Now students will vote on a further increase with at least the guarantee the funds will not be used for any other purpose. The next question students must ask is: 'Why are we intent on paying off the debt now?' The MSS is not campaigning on the benevolence current students might have for future generations.

Instead, MSS claims it is necessary in order to boost their bargaining power with the Administration. It is unclear, however, just what they are bargaining for. MSS is never at the head (or even run a distant third), in any movement for student rights. What is this 'bargaining power' intended to be used for?

Those active in Students' Society funded clubs are likely to take more interest in this referendum than the average student. Although pressure on club members is nowhere as intense as it was under Mr. Hick's referenda on fee increases, clubs know they will be the first axed if Students' Society starts trying to trim expenditures in order to meet its debt payments.

Should we pay \$2 in order that Radio McGill can obtain an FM broadcast license?

CFRM wants a community license from the CRTC, so that it can broadcast to central Montréal. For this, it is essential they win a referendum guaranteeing funding for start-up costs and salaries, in order to apply. A transmitter would have to be set up, and CFRM wants arrangements to keep the Union Building open 24 hours — or to move the radio station.

Like Concordia's CSGU radio, CFRM currently broadcasts on cable FM, accessible to only a few. Like CFRM, CSGU also wants an FM license. Should one be successful Montréal will have an FM alternative station.

CFRM is already following the strict programming guidelines of the CRTC in anticipation. The FM effort, while supported by most of the staff, is largely the enterprise of current CFRM manager Martha Marie Kleinhans. If successful, Kleinhans will likely step into the paid position of station manager.

While rushed, CFRM's bid would not have gotten off the ground if not for a sympathetic MSS president, (a CFRM member last year). If unsuccessful, Radio McGill is unlikely to get another chance. They are competing for one of the three frequencies available. Given the linguistic realities of this province and CRTC guidelines, it is unlikely that both English-language university stations will be granted frequencies.

A larger audience and ad manager will allow CFRM to gain more ad revenue, but even if we suppose good management, student radio will remain a precarious financial venture. Only a thirtieth of air-time can be devoted to advertising, and a college FM station can, as in the case of Carlton University, cost over \$300,000 a year to operate. While Carlton has an excellent station, its listeners are forever being subject to tortured cries for donations over the airwaves.

At the same time, FM broadcasting would allow CFRM to better serve its role as the radio station of the McGill community, accessible to students in all McGill buildings — something currently not possible.

Unlike many clubs, Radio McGill is not just a service to those involved, but also to anyone who listens. If you vote for it, you may be giving something back to the community.

Jillian Cohen

Brendan Weston

Melinda Wittstock

news flash

Bennett's office occupied

by Adam Quastel
and The Ubysey

At 1 p.m. Tuesday, around twenty students of Kelowna's Okanagan College invaded B.C. Premier Bill Bennett's home riding offices in Kelowna.

The students say they will not leave until they are guaranteed an open, public meeting between Bill Bennett and students of Okanagan College.

So far, Bennett has offered a closed meeting for 7:30 a.m. Remembrance Day morning.

The students are protesting Premier Bennett's war against the B.C. universi-

ty system, which has involved the slashing of provincial government funding.

The students are asking for an aid program based on grants, rather than the present loan program. As well, the students demand that Okanagan College's government grant be returned to what it was before Bennett's restraint program, and that the grant not decrease in coming years.

The occupiers, many of whom are from the Okanagan College Students' Association, have been planning the occupation for at least two weeks. They have brought sleeping bags with them in preparation for a long stay.

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Film: "America From Hitler To MX" A masterpiece created by Joan Harvey, this film directly ties American commercial interests to war. 19h, McConnell Engineering Rm. 304.

Black Students' Network: Dr Alwin Spense, Professor of Psychology speaking on "Apartheid and the Black Response in the Diaspora." 17h, Union 425/426.

Project Ploughshares and International Socialists present a discussion of violent and non-violent tactics of social change in South Africa. 16h30, Union B-09/10.

NDP McGill: club elections. 16h, Union 302. Info: 739-4223.

Pro-Choice McGill: Important organizational meeting. Do you

want a choice? Get involved! All welcome. 17h, Union 425. Info: 937-8793, 843-6984.

Amnesty International: Rev. Chris Ferguson (McGill Chaplaincy) speaking on "El Salvador's Refugees on the Honduran Border" at Al urgent action meeting. Letter writing, 19h, talk, 20h15. 3484 Peel (Newman Centre). Info: John 842-6030.

Community Affairs and the Law: Information forum: Constitutional Questions of S.15, Canadian Charter of Rights and Freedoms. Featuring Dr. Juanita Westmoreland-Traore. 19h30, Leacock 232. Info: 392-5121.

Forum National and the Faculty of Law present a conference on

"Biomedical Ethics and The Law in the Clinical Setting." 10h-16h. 3644 Peel (Chancellor Day Hall) Moot Court.

Association of Graduate History Students: general meeting. 12h, Leacock 808.

East Asian Studies presents Kenzaburo Oe speaking on "Japan's Search for Identity in the Nuclear Age." 15h, Leacock 321.

Network Speakers: presents Lloyd Axworthy, Opposition Trade Critic, speaking on "Canada's role in 'Star Wars'." 12h30, Leacock 232. Free admission. Info: 392-8976.

Live Jazz: in the Alley, featuring jazz students from the Faculty of Music. 21h. Free admission. Info:

392-8964.

Referendum: advance polls for the Students' Society referenda on FM Radio and Debt Repayment Plan.

McGill Alpine Ski Team: general meeting at 16h30, Gym, Rm 305-6. Council meets at 19h14, Gym, Rm 408-9.

McGill Badminton Club: new gym times: Wednesdays: 20h-22h30. Info: 849-0280.

McGill Outing Club: Information booth, slides, movies, Halloween party tickets. 10h-14h, Union 107.

Liberal McGill: Policy committee meeting. 16h, Union 302.

PC McGill: Meeting, elections for President, Vice-President and V-P Communications. 17h30, Union

310.

Chaplaincy: Bible Study, "Living the Life of the Kingdom, Now!" Leader: Rev. Chris Ferguson (Presbyterian/United), 16h-17h, 3484 Peel (Newman Centre). Info: 392-5890.

Westmount Public Library: George Iny (Automobile Protection Association) speaking on "Choosing A New or Used Car." 19h, Westmount Public Library (4574 Sherbrooke W.). Info and registration: 935-8531, ext. 231.

McGill Friends of the Peoples' Republic of Mongolia: Mass democracy session on role of Yak cheese in the process towards proletarian democracy. 13h, Union 105. Info: 392-8922.

Putting 'appropriate' into technology

Before one implements technologies to develop a country's natural or human resources, one must not only be able to see, hear, taste, and feel the needs of a people. One must also be able to work towards this end in a manner which invites mutual development and co-creativity. Not easy.

by Heidi Nast

Before one implements technologies to develop a country's natural/human resources, one must not only be able to see, hear, taste, and feel the needs of a people. One must also be able to work towards this end in a manner which invites mutual development and co-creativity. Not easy.

I remember when the word Appropriate Technology conjured up smiling faces and visions of communes powered by windmills. Although it is true that Appropriate Technology was brought into a broader social context during the late 1960's, it is, in fact, a much older concept than many of us would think. Of late, Appropriate Technology (AT) has gained international credibility and has been incorporated into numerous and diverse academic disciplines; this is evidenced by the global emergence of centers designed to study and promote the use of appropriate technologies.

The word "appropriate" is a value term chosen to suggest that more humane, sensitive, and nonpolitical means by which technologies can be devised and applied are literally more appropriate.

Initially, most AT centers worked on solar energy. I remember visiting the small AT center in central Texas. It consisted of a small, wooden, barn-like home in the middle of nowhere which housed a family of four. The house was set on a large plot of land filled with numerous solar contraptions and wind mills. The experiments were carried out by interested/concerned individuals, mostly engineers, and were funded by private individuals or groups. A rare number of projects were actually viable business contracts.

These types of centers were given a welcome, if brief, economic and media boost during the oil crisis of the 1970's. The reasons solar technologies were thought to be "appropriate" are many: Solar cells use the renewable energy of the sun and do not deplete nonrenewable resources such as oil, gas, coal, etc.; there are no dangerous waste products; it could supply cheap easily accessible, and significant amounts of daily energy needs — especially in sunny, dry climates; it is a relatively simple and cheap seed technology for local ingenuity, expertise, and businesses; and local energy needs could be addressed on a local scale.

This contrasted with the large centralized energy systems developed and lobbied for by oil and mining interests. For example, the South Texas Nuclear Power Plant was designed to supply all power needs for central and southern Texas, despite widespread public outcry.

"Appropriate" now applies to much more than solar technologies. In general the term applies to technologies which are conceptually and practically designed to promote integrated human and natural resource development. The technologies are typically labour intensive, have low capital overhead and are designed to directly satisfy basic or critical needs. In addition, it utilizes local natural and labour resources and promotes the development of local and regional markets.

AT has been particularly successful in lesser developed countries (termed LDC's), which typically have an excess of human resources and small reserves of foreign investment capital. Most of the problems in LDC's stem from a lack of sufficient water and/or food production. Therefore AT has focussed on such things as development of water pumps, irrigation systems, improved crop yields through use of hybrids or fertilizers, etc.,

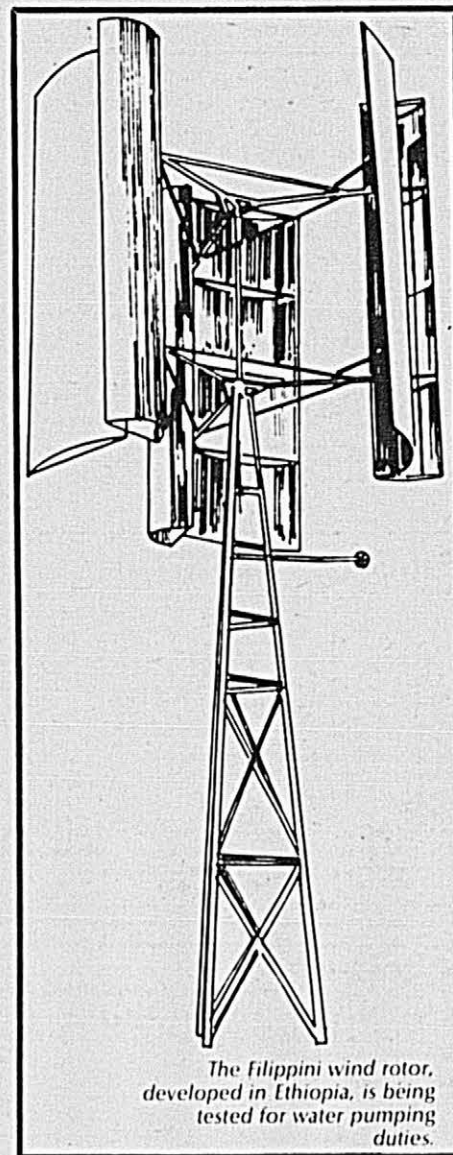
and the establishment of small independent farm co-operatives.

As LDC's become more agriculturally self-sufficient or for LDC's having little arable land, AT can be employed to develop industrial mineral resources. Industrial minerals include potential building materials such as sandstone and clay (for bricks), granite, or marble.

In many cases, old colonial import-export ties were developed around industrial minerals to benefit the mother country. For example, many African countries traditionally bought granite from Britain, marble from Italy, etc. This resulted in a lack of domestic mineral resource development.

Since the 1940's however, many colonial countries have gained independence. Most of these countries have little foreign currency to spare, and hence much of the physical structure established during colonial rule is deteriorating. Unless domestic resources and markets are tapped, the problems will worsen.

AT is especially suited to industrial mineral resource development. The minerals are commonly near-surface, occur over a large area, and require little to no milling or chemical processing. Hence, investment capital is low. This



The Filippini wind rotor, developed in Ethiopia, is being tested for water pumping duties.

means that a minimal type of technology can be developed which is relatively simple and cheap, and which can be designed to employ an optimum number of people. "Appropriate" industrial mineral development will probably be the next major focus of development agencies.

The most important feature of AT in both agricultural and mineral resource development, however, is that it be

designed by or co-created with the people who will use it. This demands a shift in the attitudes of "have" countries from being paternalistic money- or "expert"-givers, to ones which serve as human mirrors or counsellors which help people to identify and solve their own problems. In this way, aid agencies serve as global partners in mutual human development.

The obstacles to this kind of development are many and include corruption, tribal rivalries or warfare, illiteracy, general distrust (often well founded) of aid agencies, especially ones from the west, and the unglamorous small-scale image (which makes it seem second best to many countries who have historically been treated as such).

But the success in human terms of these "appropriate" development programs attests to their validity. This success has resulted in an increasing number of private or governmental aid agencies which now require or favor programs using AT concepts.

One important aspect of Appropriate Technology is that of addressing immediate needs through local means. The thought process and implementation procedure for this is relatively simple and practical, i.e., linear.

This is, in fact, the basis upon which (wo)man began to create tools. The problems at that time were technical ones which were characteristically related to human need. The tools developed to tackle these problems were developed and used locally. Hence, the first forms of technology had many elements which are now considered "appropriate".

Examples of this type of linear and unconsciously-applied technology are seen in *de re Metallica*, the first detailed and (beautifully) illustrated account of mining technologies of the sixteenth century. The book took over 25 years to complete and was written out of general personal interest in 1556 by Georgius Agricola, a physician from Saxony.

But as technology became increasingly more evolved, it gave us greater control over nature and consequently more time to be creative. Hence, in time, multiple or alternative technologies were developed to address a single need.

The emergence and establishment of world trade and market systems however, led to the development of large political (power) systems which would profoundly influence the manner in which technology would be devised and implemented. That is to say, that inherently political, nonlinear market forces entered into the technology equation. No longer would technologies be devised solely to address local, direct needs. Rather, needs could be created or maintained by the large power blocks to secure or maintain market shares, a notorious example being Nestle's distribution of baby food formula to LDC's in the 1970's.

Entire courses, disciplines and research centers such as the Center for Developing Area Studies at McGill, have since been created to study the complex socio-economic and political (human) havoc which has ensued.

During the 1960's numerous populist movements began or gained impetus around the world. Many African nations gained independence, the Women's

movement was a university student that related to U.S. (nam) led to the emergent governments.

At about this time people in the U.S. aware of the, in political power of forces as the U.S. industries. In many lobbied effectively numerous direct development funds centives, blockage groups devel

The

by Elaine Medline

Parasitic diseases in the tropical eight hundred million with malaria, and die from this Schistosomiasis deaths per year. staggering yet the statistics alone the human suff losses which acco infection. Nor do "trypanosomiasis or"blindness onchocercaria". B tures of chil Leishmaniasis, an cheeks? At some

Unnecessary drugs

by Leah Geller

Developing countries need large quantities of a small number of essential drugs. But what these countries need clashes with the reality of the drug market; they are receiving what the World Health Organization describes as non-essential drugs.

In North Yemen, only 1.3 percent of drug imports were treatments for the three most widespread diseases of the country — diseases affecting 800,000 people. An estimated 210 million people in the Third World suffer from malaria, and people continue to die of diseases well-controlled in the developed world such as diphtheria and tuberculosis. The tragedy is that these diseases are treatable and curable with common, inexpensive, and easily available drugs. The poor in these countries, in particular, lack purchasing power, so types of drugs marketed often bear no relation to a poor country's most pressing disease problems.

Diphtheria is the single largest cause of death in children under five, with 4 — 6 million dying every year in these impoverished areas of the world. Mothers lack the health resources to prevent this easily treated illness.

The essential drugs that do reach the market are often overpriced, grossly inflating the medical costs for the countries that can least afford it. An illustration is made in a recent Oxfam booklet.

In non-drug producing countries, penicillin could only be bought in fancy, film-coated capsules. These were sold in small packs at several times the prices of ordinary penicillin tablets used in British hospitals at the time.

The drug salesmen have exploited their monopoly and economic power; the absence of regulations to control unreasonable prices for medicines has made it that much easier to do so. The necessary anti-tuberculosis drug isonazid cost ten times more in Niger than in Nigeria. One supplier sold methylodopa, a drug used to combat high blood pressure, to Trinidad at six times the price charged in Barbados.

Meanwhile these poorer countries are sent vast quantities of combination drugs, such as irrational mixtures of antibiotics and vitamins, ineffective cough and cold preparations, and the highly advertised multivitamin and mineral tonics, which are promoted and

consumed at the expense of basic life-saving drugs.

In some developing countries up to twenty-five percent of the drugs consumed fall into these categories. The Third World populations have even adopted the drug consumption habits of rich nations as a result of the drug manufacturers creating a demand for expensive formulations such as antidepressants.

The most destructive abuse of Third world dependency on the drug industry is the marketing of harmful drugs that are banned or restricted in the developed countries. The result is the dumping of drugs not approved in their countries of origin, misleading advertising and high pressure marketing techniques.

As of 1983 antibiotic steroids were being sold as an appetite stimulant for children in countries such as Peru, India, Bangladesh, Indonesia and Kenya. These harmful preparations can in fact stunt children's growth.

Two anti-arthritis painkillers have

editorial comm

Science is emphatically an important part of culture and its applications continue to transform the every aspect of the relations between men and nations.

from Scien

Science does not end in the laboratory. The scientific can role in societal development and the importance of this scientists and the public alike.

As editors of the Sciencedition we hope to promote an aw levels at which science can operate. Scientific discovery is teresting, but it is equally relevant to regard science in discuss the long term significance of advancements in sci Hence, we consider an issue devoted to discussion of sc development to be particularly timely. Science and techno ponents of any program of development, although their role tie than people realize.

Past efforts in development have reflected the attitude t alone can provide solutions to problems in developing ar repeatedly failed to produce the desired results.

Current directions ideally combine indigenous knowledge vironment with scientific expertise to generate solutions or appropriate to the resources and needs of the people. T munities must ultimately control the course of their o changes are to be of any lasting value.

Our role as scientists is to provide a source of expertise co-operatively with developing communities to bring abou begins with awareness and discussion of needs in context — starting right now.

Cameron Eckert

successfully launched, unrest (particularly involvement in Vietnam) of strong student much more. A growing number of became increasingly by ways, destructive such gigantic market auto and steel industries, these industries Congress to obtain (eg. research and indirect (eg. tax incentives) funds to smaller alternative

technologies) subsidies in support of their interests.

At this time, for example, a large anti-trust suit was filed against the three largest car manufacturers for shelving (ie. buying and hiding) anti-pollution patents invented by individuals-at-large. In addition, government funding for university research projects involving the development of alternative technologies such as alcohol or steam engines were suddenly cut as a result of powerful lobbying by oil companies.

These types of actions fueled a growing public distrust of "the Establishment" — especially large

(multinational) corporations. This distrust led to the emergence and growth of consumer advocacy groups, such as that headed by Ralph Nader, and privately funded Appropriate Technology centers.

Many AT centers drew heavily from, or had the same general philosophy as E.F. Schumacher, a British economist, who in 1973 published his now classic book, *Small Is Beautiful, Economics as if People Mattered*. It marks the first time that human development was considered as a functional/vital part of general economic theory.

In 1972, the Club of Rome, a renowned group of scientists, economists, in-

dustrialists, educators, and humanists, published another classic work entitled, *Limits to Growth*. The book was the first attempt to do a global systems analysis of five major areas believed to vitally affect (wo)man's quality of life — accelerating industrialization, our rapid population growth, widespread malnutrition (now commonly referred to as the World Food Crisis), depletion of nonrenewable resources, and a deteriorating environment.

The book pointed to the eventual collapse of life support systems (and therefore of human life) if one continued to view human and natural resource

development as separate entities with *development* defined in monetary terms. Furthermore, because the book was based upon the results of a computer program, because the program was formulated and run at MIT by well respected scientists, and because it was backed by world renowned industrialists, it made many corporate heads turn. This, in many ways, paved the way for increased acceptance of the validity of "Appropriate" types of technology.

In the next articles, several interesting AT centers or groups across the world will be highlighted and some of their projects discussed.

fight against devastating parasitic diseases

kill millions of people each year. Over people are infected more than one million disease annually. These figures are not only numbers — they possibly reveal the economic impact of many every parasitic diseases, such as heart disease.

know if anything is being done to end these diseases which ravage so much of the world's population.

There is no vaccine for any of the tropical parasitic diseases. There are preventive measures for only one, malaria and even basic diagnosis is difficult. Because of this, parasitic infections have been coined as "the great neglected diseases". This label is unfair as there are many scientists and organizations which refuse to ignore these organisms that invade the body and arrest its processes. The real problem is that parasites are difficult to control as they resist strategies to manage them. The malaria parasite, *Plasmodium falciparum*, is already reported to be resistant in thirty four countries to the one time "wonder drug" chloroquine. It is hoped that by

developing vaccines and new drug combinations, and through education of the population in endemic areas, parasitic diseases may one day be killers of the past, and no longer a burden to developing regions.

If the goal of eradication or control of tropical diseases is to be reached then research in this field must be organized and coherent. For this reason, a worldwide network called the Special Program for Research and Training in Tropical Diseases (TDR) was created ten years ago. The network is sponsored by the United Nations Development Program, the World Bank and the World Health Organization.

More than four thousand researchers in one hundred and twenty five countries in the TDR program are working to tackle

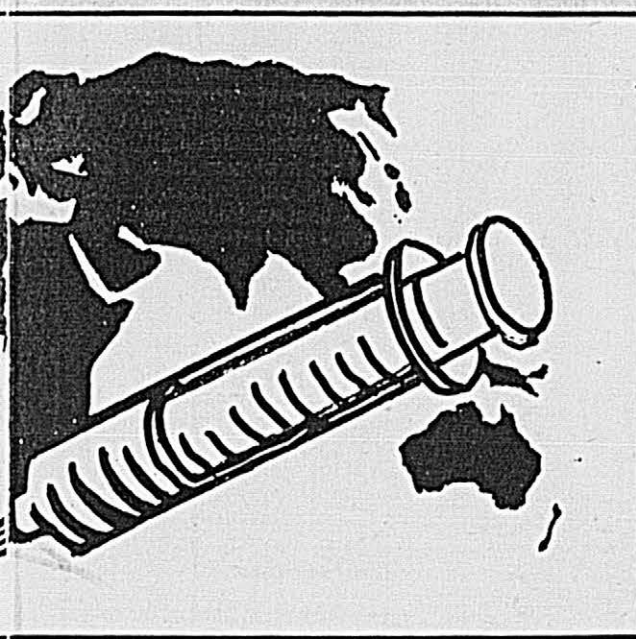
six of the most devastating tropical afflictions, including the parasitic diseases malaria, the trypanosomiasis, filariases, schistosomiasis and leishmaniasis.

TDR has organized scientists into three groups, the Scientific Working Groups, the Steering Committees, and the

this a war that can be won?

There is reason to be optimistic in light of recent advances. One such advance is the identification and synthetic production of malaria parasite components, the antigens. This may lead to the development of a malaria vaccine.

for unnecessary ills



Provera claim that this clause is simply a justification for the dumping of an unsafe form of contraception by the West on the Third World. Since the long term effects of D.P. are not yet known some feel that these women are being used as guinea pigs for the testing of this drug.

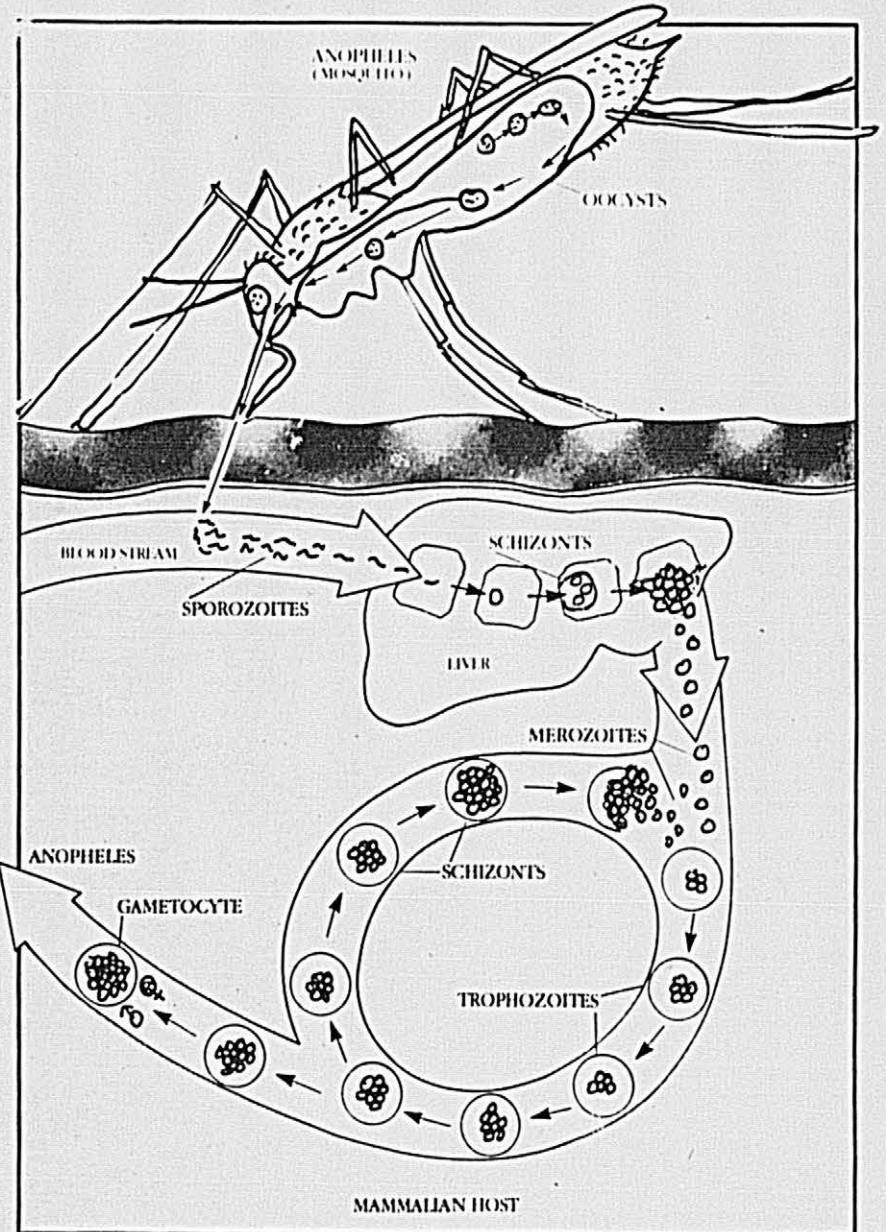
The side effects so far discovered include a disruption of menstrual patterns, effects on fertility, breast cancer, and cervical cancer. Yet the U.S. Agency for International Aid (AID) and the International Planned Parenthood Federation have been pressuring the U.S. Congress to support a provision in the proposed Drug Regulation Reform Act which would allow U.S. drug companies to export directly to other countries drugs such as D.P. not approved by the FDA.

The pharmaceutical industry has created major problems for developing countries by marketing and selling unnecessary, useless, and even harmful drugs. These industries are strictly regulated in North America and the rest of the developed world. How is it that they have the power to distribute products that have less than beneficial effects in countries that require, more than ever, safe, effective, suitable treatments?

The reasons are simple. The developing countries imports of drugs are now worth about 8 billion dollars. The Western controlled multinational drug companies control close to 90 percent of the production and trade in pharmaceuticals, accounting for the rich industrialized countries' strong trade surplus. This dependence has made the Third World vulnerable to the corporations' interests.

Many of these developing countries have little power to regulate the quality, sale, or distribution of these drugs. In fact, when these import-dependent countries attempt to organize price and safety controls and develop domestic drug companies, they risk a pull-out of the transnationals eliminating the only existing source of necessary pharmaceuticals.

And so the paradox continues; the need for necessary drugs stands alongside massive expenditures on corporate advertising, leading to peoples' attitude that there must be a "curative pill for every ill". This in turn promotes the spending of scarce money on ineffective vitamins and tonics and harmful inappropriate treatments.



Research Strengthening Groups. The Scientific Working Groups plan, implement and evaluate programs in specific areas of research. The Steering Committees review progress and assess research proposals submitted by scientists for funding under the program. The responsibility for strengthening research capabilities in tropical countries is given to Research Strengthening Groups.

TDR has recently published workplans outlining strategies to combat each of the six diseases. For example, their objectives for malaria are to find new drugs, to develop suitable methods for research on chemotherapy, to identify, produce and assess vaccines, and to gain an understanding of the immune response to malaria. In addition to these broad objectives, TDR has listed more specific plans and activities.

TDR is an ambitious project and A.W. Clausen, president of the World Bank, writes that he hopes the program "will continue to provide a steady stream of new weapons — vaccines, drugs, diagnostic and control measures with which to control the scourge of tropical disease". It is interesting that parasites are likened to enemies in a war. But is

A vaccine is a harmless preparation, that, upon introduction to the body, will induce a response to protect an individual from a harmful agent such as a parasite. Potential vaccines need to be tested and their ability to control the parasite assessed although testing of vaccines is costly and difficult. Because human subjects must be involved, and secondly, more than one type of vaccine should be tested as the immunity to the parasite is both species and life-cycle stage specific. TDR showed foresight when it organized a meeting last February dealing specifically with malaria vaccine trials. The vaccine is so urgently needed that it might be given out in hurry before proper testing has been done hence planning is imperative.

A further advance in malaria research came about in 1984 when a new anti-malarial drug, mefloquine, and its "allies", sulfadoxine and pyrimethamine were developed. These drugs were the result of research undertaken by the TDR, research institutions and a Swiss pharmaceutical company. An original study in Thai farmers showed that the drugs were successful in suppressing malaria.

continued on page 7

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Vannevar Bush Not Enough (1967)

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Monica Vetter

Presenting the incredible laser

by Brian Thelmer

A crisp autumn evening with a cloudless night sky against the constellation against the constellation of the downtown office buildings. I gaze up into the black of space to see which stars can be seen through the glare of the city, when suddenly a bright beam of light fires across the zenith.

Has the time come for our laser satellites to shoot down a Soviet onslaught? No. It is still 1985 and the beams are only the search lights from Place Ville Marie. But it is very apparent how important the laser has become in our lives.

McGill was honoured last month to have Dr. Arthur Schawlow give an entertaining talk and slide show for the Physics Department's Anna McPherson Lecture. None are better qualified to lecture on the incredible laser than he, who invented the device and subsequently won a Nobel Prize in 1981.

Born in New York State, but raised in Toronto, Dr. Schawlow received all three of his university degrees from University of Toronto, finishing in 1949. He spent two years as a Research Fellow at Columbia University and then moved on to Bell Laboratories where in 1958, by extending principles of the microwave maser, he built the first working visible light laser.

His work on his invention has never stopped, and he has continued to make outstanding contributions to the field since moving to Stanford (California), where he has remained for the last twenty four years.

Dr. Schawlow, a portly man in his fifties, standing in a rumpled grey suit with his tie off to the side, gave a casual image to a casual introduction to the laser, which has grown from an apparently useless curiosity to something that could decide if we end up as fallout floating in the stratosphere.

The laser, so often thought of as representing advanced technology, is actually a rather simple machine. The light we see and the light we don't see (microwaves, UV light or X-rays) is in essence a multitude of particles called photons. These particles, however, cannot simply be pictured as billions of little specks dashing across space — they also act like waves. That is, the behaviour of large numbers of photons is analogous to the behaviour of water waves in that they are reflected and diffracted, among other effects.

To extend the metaphor, the individual photon is said to have a wavelength, which for a wave of water is defined as the distance between two wave crests. The wavelength ascribed to a photon is appropriate to the wavelike behaviour seen. The more energetic the photon the shorter the wavelength.

Putting aside the photon for a moment, one also has to think about the nature of electrons going about an atomic nucleus. The planetary model of atoms was abandoned over fifty years ago, but it is still easier to picture orbits of different distances from the central nucleus.

Each of the orbits are said to have a specific 'energy level', with higher orbits having higher energy. But atoms are 'funny' in that not any old electron orbit is permitted, only specific heights are. This is like having a lecture hall where only rows 2,3,6,15 and 22 are allowed for seating and all others are left empty.

The net tendency is for an electron to exist at the lowest energy level. For an electron in Level 2, with energy $E(2)$, to go to a higher level such as Level 14, it has to be hit by a photon of an energy exactly equal to the energy difference between

the two levels $E(14) - E(2)$. This is absorption.

While an electron is in a level higher than Level 1 it is unstable. Although it may take an infinite amount of time to do so, one of two things can happen to it. The first is spontaneous decay where the electron falls back to level 2. This is a drop in energy and causes a photon of the energy difference to be emitted in a random direction.

Alternatively the electron can be exposed to photons of this energy difference and be induced to 'fall down' and release a photon. This is called induced decay; the photon released is fired off in the direction of the photon that came in. One photon in, two come out. This is principle of the laser.

The electron need not drop directly from Level 14 to Level 2; it may go from Level 14 to Level 9 to Level 2, emitting two photons of different energy. Any downward route is possible.

In a laser, three levels are important. Level 1 is the bottom; Level 2 is just above Level 1 in energy and electrons will stay there a long time before spontaneously decaying; Level 3 is higher than both in energy and is highly unstable.

Imagine a lot of Level 1 electrons absorbing photons that send them up to Level 3. This is called optical pumping. The electrons pumped up to Level 3 fall down to Level 2 where they are metastable. One of these electrons spontaneously decays and emits a photon of energy $E(2) - E(1)$. This hits another $E(2)$ atom causing an induced decay — now there are two photons flying out, then four, then eight, and so on.

All of these induced photons will move in the same direction, which is one of the more useful features of the laser. The photons will be precisely of energy $E(2) - E(1)$ and the light will therefore be monochromatic.

The material used for this cascade of atoms can be a gas, such as carbon dioxide or helium, or solids, such as a ruby. Dr. Schawlow has tried using Jello with mixed success, and thus it seems that the edible laser is possible.

The more photons around to cause inductions the better. Mirrors are therefore placed at the ends to reduce loss of photons and maintain directionality. One mirror is semitransparent so it lets out some photons, which comprise the laser beam. Up to one percent of the photons may go through. The photons coming out all have their 'wave crests' occurring simultaneously (in phase). This feature of the laser makes holography possible.

So why is a laser different from the flashlight beam? A flashlight beam puts out photons of many wavelengths (i.e., white light); the

photons are out of phase and are emitted in many directions to be directed by the mirror behind the bulb. Photons from a laser all have the same wavelength and are emitted so that they all travel in the same direction.

The laser has been used as a surveying instrument of high accuracy because of its strict directionality. Today one can grade land to be perfectly level, or design drainage for farm pastures. Laser beams have been bounced off mirrors on the moon to measure the distance down to 15 cm.

The monochromatic nature of the laser permits its use in laser gyroscopes where motion of mirrors cause a change in wavelength and indicate that motion has occurred. The development of lasers tunable to a whole spectrum of wavelengths are used in spectroscopy to investigate electron energy levels to a high degree of accuracy.

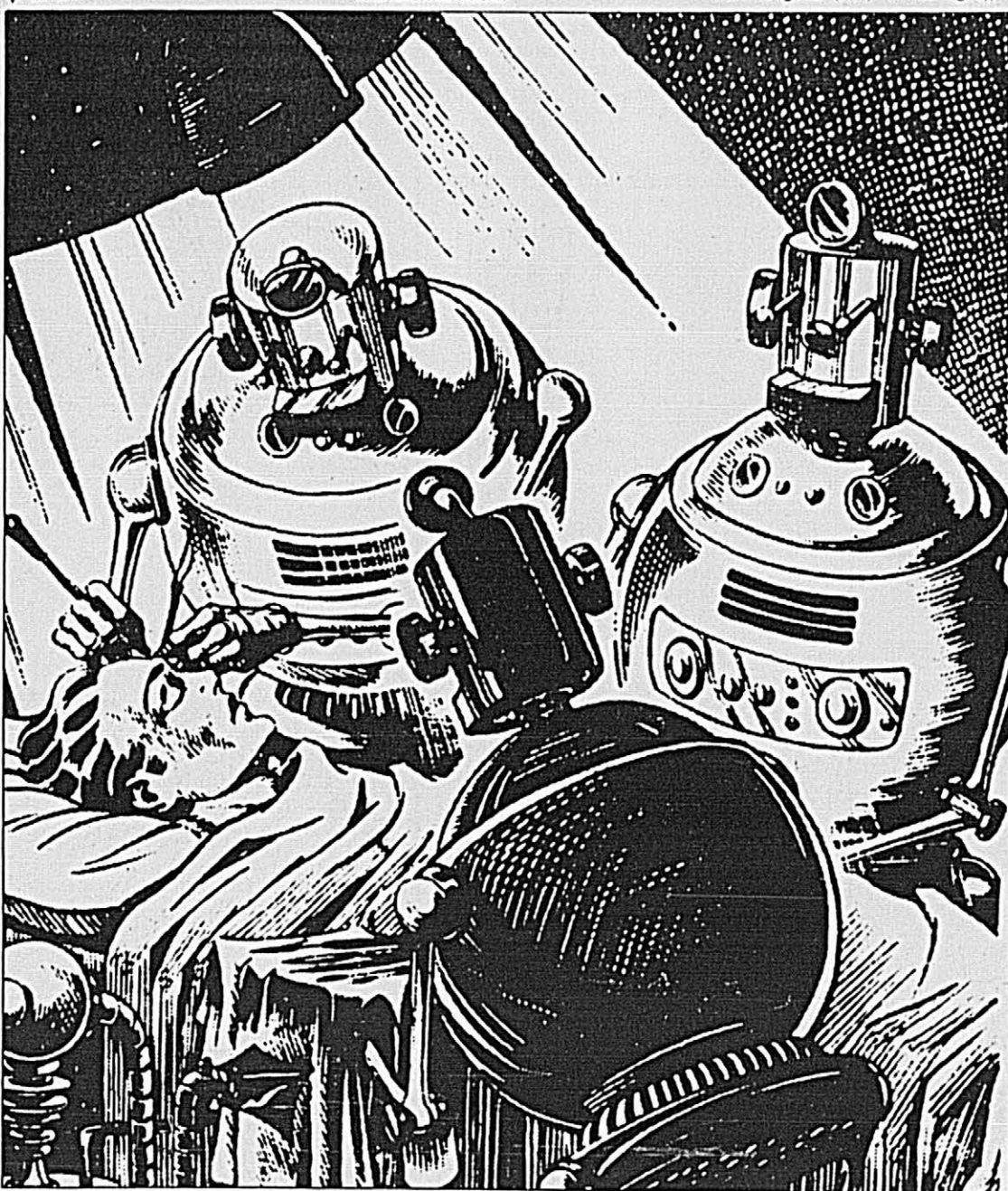
The power and directionality of the laser are combined in a variety of uses. One slide depicted a hole punched through a single blood cell. It is now commonly used in eye operations for such ailments as retinal separations.

Experiments in fusion reactors bombard a hydrogen fuel pellet with beams that mimic the pressure and temperature of the interior of the sun. Schawlow also mentioned that he has a laser typing eraser which vaporizes the ink off the paper, but demand has been low with a \$2,000 price tag.

Holograms are now placed on our credit cards, compact discs sit in some of our living rooms and lasers transmit signals that run through telephone cables; the device that was only a curiosity twenty seven years ago has now permeated almost every aspect of our lives.

As Dr. Schawlow said, you can't tell where science is going to lead or what the consequences of a discovery will be; it is a cumulative process. At one point he mentioned he had the opportunity to develop a uranium processing technique using lasers. He refused, not wanting to hasten the day when uranium processing becomes easy.

I asked him, in light of his refusal to work on such a project and with the billions to be spent on SDI, should the individual scientist refuse to work on politically or morally questionable projects. His reply was that it is not a given that SDI is undesirable; it is up to the scientist himself to decide if he has questions on the implications of his work. As the laser clearly demonstrates, you can never foresee what any discovery will portend for the future.



Physics fun in Winnipeg

by Don Mathewson

The 21st Canadian Undergraduate Physics conference was held from October 19 to 22 at the University of Manitoba in Winnipeg, and, for the first time in several years, there was a significant McGill presence at the conference, with four third year students participating: Juan Gallego, Tal Duc Phan, William Trischuk, and yours truly.

The annual affair, which was initiated by students from McGill and U of T, is organized by students of the host university. Initially, the conference oscillated between McGill and U of T, but its scope has since expanded, and it now travels

in a random fashion across the country (Fredericton '84, Toronto '83, Victoria '82) based on who is willing to organize it.

The conference is in fact a competition. Participants can enter one of three categories: short talk, poster, or major paper, in which they present a synopsis of work in which they have been involved. The presentations are judged, usually by professors of the host department, and prizes are awarded for the best in each category.

Aside from the competition, there are also several physics seminars given by distinguished guests (this year's conference featured a talk on Strange Matter by Dr. Val Fitch, a Nobel Laureate from Princeton),

tours of nearby physics-related facilities (we visited the U of Manitoba Medical Physics Division, as well as Atomic Energy of Canada's Pinawa facility), and various social events.

According to Ariel Gurvay, this year's organizer, the purpose of the conference is to "get students from across the country together to listen to some of the top minds in physics," and to see what other Canadian students are working on. For some of the first and second year students at the conference, it also provides, with an eye towards grad school, a picture of physics research in Canada.

This year, as always, the talks, posters, and papers ranged over all

branches of physics: from astrophysics to solid state physics, with excellent presentations made by 47 students from across the country. This year's winners were: •short talk — Eric Donovan (Western), Duane McMullen (Queen's)

•poster — Tony Basile (York)

•major paper — Keith Perkins (SFU).

Despite the fact that McGill was not in the winner's column, our presence was strong nonetheless: our 4 talks were well attended and received. Future McGill science student participation at such conferences should be encouraged, as it benefits both the student and the University. It's also a lot of fun.

...sowing the seed of aquaculture in development

continued from page 1

developed. The desired result from this approach is to increase cash flow and foreign exchange while providing employment.

Although the two need not be mutually exclusive, it is felt by many that the large scale approach would benefit relatively few while the small scale projects would reach a greater number of people especially the poor by providing jobs, a modest income and a source of food. The scale of aquaculture projects in India have tended to reflect this opinion.

Agencies in India such as the Central Marine Fisheries Research Institute (CMFRI) and the Central Institute of Fisheries Education (CIFE) have initiated small scale pilot-aquaculture farms with selected rural families in the poorer communities and villages. In addition there are training programs for rural poor and marginal fishermen/farmers. The projects are monitored and assessed routinely in order to identify problems as they arise and to make the appropriate adjustments.

CMFRI scientists have supervised the selected families and worked with them to prepare stock ponds. Ultimately, trained individuals in the village and community assume the primary responsibility for the project including maintenance, management and harvesting. In India the government pro-

has been found that the productivity can be increased several fold by selecting particular species to hold in the compounds thus eliminating interspecific competition and predation. This type of "integrative aquaculture" has been used in other areas whereby native Indian carp are grown in the ponds of duck farmers. The duck waste enhances the primary productivity of the pond thus increasing the population of food organisms available to the carp which are able to grow in such eutrophic conditions.

In Nepal consideration of aquaculture first began in 1947. It was proposed at that time that traditional Indian major carp be used. The "fingerlings" were brought from India and cultures were attempted in Nepal. The only successful projects were in Terai as the fish did not survive at the higher altitudes. A more specific examination of local conditions was needed and thus experimentation with a number of different species from China began.

To effectively implement an aquaculture project local resources must be used. In both India and Nepal aquaculturists develop cultures in the ponds that are available. To construct tanks specifically for this purpose would be impossible due to the lack of monetary resources in many areas.

There are certain drawbacks associated with the use of ponds for the containment of

species and will thus only partially reduce the culture losses.

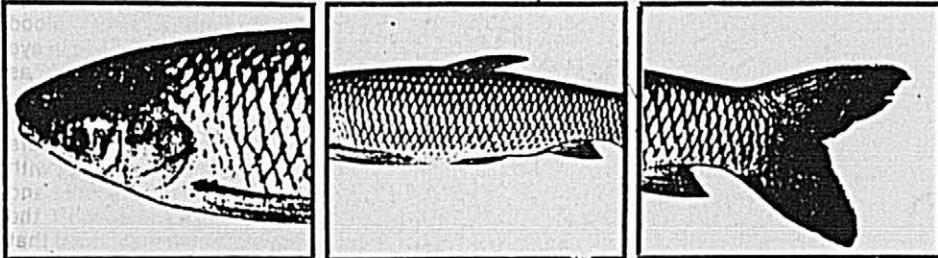
A researcher at McGill who is from India is exploring effective methods for the use of natural plant toxins to clear a pond of the undesirable fish before stocking the pond. Certain synthetic toxins cannot be used as they tend to be retained in the pond water and sediments whereas natural toxins taken from plants can more readily cycle through the system or be degraded. The result is a pond that is void of predatory species and suitable for the introduction of the culture

species.

This research reflects the importance of the need for researchers who have extensive knowledge of the conditions of the region intended for aquacultural development as well

as a clear idea of the objectives of the developing nation.

It is only through a concerned approach that considers the specific nature of developing regions that the people of developing nations will benefit from advances in aquaculture and science in general.



grams have been consistent in organization and function while taking into account the differences related to habitats, species and local conditions.

Research must involve the available resources and the projects must have a practical design. Polyculture is generally viewed as a more efficient means of raising crops. Under this system two or more types of crops are grown on the same plot of land and ideally one may enhance the growth of the other.

In Nepal grass carp, silver carp, bighead carp and common carp are cultured together in a polyculture as these species have non-competitive feeding habits. This allows for higher yields of fish from one pond than would have resulted from single species aquaculture. In the Ernakulam district of Kerala penaeid shrimp are grown in rice fields. A traditional technique in India involves the trapping of juvenile shrimp migrating shoreward in the flooded fields. It

fish cultures and aquaculture research. In order to carry out research or check for disease in the culture, the fish must be sampled periodically. The effect of this sampling on fish growth can be variable. Some species can be sampled twice a week without ill effects although others will perish if handled more often than once a month.

In many cases fish mortality goes undetected as the dead fish cannot always be seen or the fish are lost to predation. Ponds selected for fish cultures are generally long established and contain certain predatory fish which occur there naturally. The problem of the removal of these predatory fish is the subject of current research at McGill University.

To rid the pond of these fish one could use a netting technique such as *seining* which involves drawing a large net across the pond. However, this method may not result in the complete removal of the undesirable

...combating parasites

continued from page 5

Inevitably, the malaria parasite develops a resistance to drugs. Resistance to mefloquine has already been reported in parts of Asia and Tanzania. Fortunately, experiments indicate that simultaneous administration of three drugs delays both the time of emergence of the disease and the level of resistance of the parasite. Single doses of the triple combination cured falciparum malaria in over ninety-five percent of adults in different areas of the tropics.

In an effort to delay resistance of the parasite to mefloquine, the Scientific Working Group for the Chemotherapy of Malaria has drawn up unusual guidelines which will restrict the deployment of the new drug combination. The drug cannot be distributed through pharmacies but only through channels such as hospitals, malaria clinics and national malaria control programs.

Much of the research done on vaccines and new drugs has been directed toward malaria, and indeed, malaria is the major parasitic killer of the tropics. However, scientists are studying many other tropical parasites and hopefully, vaccines and drugs will be developed for these parasitic diseases as well.

It should be noted that vaccinations and new drugs are not the only answer to lessening the effects of parasites. People living in high risk areas should be informed about parasitic transmission and should then take precautions in order to

decrease their chances of becoming infected.

To illustrate, Schistosomiasis, a sickness affecting countries in Africa and the Eastern Mediterranean, is caused by a parasite which is transferred from person to person via snails. The eggs of this parasite damage human bladders, resulting in bloody urine. Schistosomiasis is so prevalent that some people believe that red urine is a sign of growing up.

If the nature of the disease was better understood, children and their parents would know that urinating in or near water allows parasite eggs to be transferred to snails, and this risks infection of others. The importance of education should not be underestimated. Projects such as school treatment campaigns are instrumental in teaching children in endemic areas about health.

Aside from organizations like TDR, there are other groups which are investigating the biochemical, immunological, and ecological nature of tropical parasites. Important research in parasitology is currently going on at McGill University at the Institute of Parasitology at MacDonald College. At present, it may seem that control of parasitic diseases is far away, in spite of organized scientific efforts. However we should remain optimistic that these parasites, hindering progress and causing suffering in developing countries, will soon be impotent against future scientific weapons.

Tired of being an armchair critic? Do something. Write for the sciencedition.

Leave your name and number at the Daily office, or ask for Monica or Cameron.

continued from page 2

Bioenergetic/Psychodrama therapy with Elaine Zimbel. Open workshop Saturday Nov. 2 or Nov. 16. 10 am to 4 pm. For information and registration phone 866-0279

Fashion and Glamour Photographer Have experience with agencies in Toronto, N.Y. and Beverly Hills. Will take all types of portraits in colour only at very inexpensive rates. Enquiries to Art Liem 933-7953. After 7 pm

Cheap Trips to Acapulco, Dominican Republic and Florida. Call 684-5732 or 684-2452 for more info.

Français langue seconde — cours privés — Professeur natif du Québec avec expérience (Québec, Afrique, New York). Tél: rendez-vous: A. Thérien 286-9541.

VEG, Vocational Exploration Group. Worried or confused about careers? Try vocational exploration and career counselling featuring interest testing, and CHOICES, a computer-assisted career search program. Orientation meeting — Monday, Nov. 4, 3:00. McGill Counselling Service 392-5119.

Willing males and females needed for student haircuts. Supervised by professionals. Wednesdays 6 pm — 8 pm. Call for appointments, 849-9231. Estetica 2175 Crescent.

"Guaranteed higher grades, guarantee you'll pass every course through unlimited hypnosis and flotation or money refunded. Call Mrs. Miriam Praw. 935-7755 1538 Sherbrooke West, room 710. Why wait, do it now.

Get Results: A professionally prepared résumé will maximize your chances for suc-

cess. For a résumé prepared by a personnel specialist call: 849-0065.

361 — ARTICLES FOR SALE

Sailboards (4) for sale. Mistral Superlight, Fanatic Rabbit, Hilly 295, Mustral Hookipa. All in excellent condition. At ridiculously low prices. Must sell now call Simon 684-5202, or Michel 667-9058.

Dual C5515 turntable: \$150. Norelco Receiver: \$45. Telefunken reel to reel tape deck: \$135. Superscope cassette deck \$40.00. Speakers included with stereo system. For info call Nicole at 935-1443.

1 couch with two armchairs: \$135. Ceramic coffee table: \$50. Stereo system: \$250. For info, call Nicole at 935-1443.

Down coats — wide selection at great prices — long coats reg \$300, EXXA \$99. Bomber jackets reg \$250, EXXA \$110. Ski jump suits reg \$350, EXXA \$125. Yes, these are all white goose down fashion garments. EXXA 1477 Mansfield.

Sharp 20 inch colour TV, 1980 model, working condition, \$50, Sharp RT-10 cassette recorder, metal capability, dolby reduction unit, perfect condition, \$115; phone: 931-0821

Beds — Twin sized, frame, boxspring, mattress; antique piano with ivory keys, made by Lindsay Bros; huge framed hallway mirror. Low prices, must sell. Call: 484-1867.

MKII Canadian Army fall/winter field jackets with liners, only \$34.95, Army winter parkas — new, \$185.00, wool socks \$2.50. EXXA 1477 Mansfield

"10,000 different movie & movie star

posters. Catalogue \$2.00. Mnemonics Ltd. Dept H, no. 9, 3600 21 St. N.E., Calgary, Alta. T2E 6V6

Climbing equip 2 expedition packs, expedition parka, two 3-season sleeping bags, Galibier double boots, bivouac sack, 4 season tent. 60-40 anorak. Items are like new.

McGill jackets: white leather arms, red wool body, "McGill" on the back, crest, quilted winter lining, registration number, \$115.00. 8 weeks delivery, call 286-0903.

Hard hats — CSA approved — great for "actively" watching football, hockey, Halloween parties — many colours — only \$4.99 — EXXA Military Surplus 1477 Mansfield.

367 — CARS FOR SALE

LADA 1981 no rust. Excellent condition. 4800 km. Bargain at \$1000. Telephone 365-7170 after 6 pm.

Renault R 12 1975 in very good running condition for \$800 or better offer. Call 282-0292 (Before 9 am or after 11 pm)

Forget the bus or metro...be independent with your VEGA hatchback '74 Has winter tires and only 32,268 miles. \$150 as is. 655-5721

372 — LOST & FOUND

Lost: a black jacket, left in either Redpath Library or second floor of Leacock Building. Reward. Please call 286-0067, 286-0223 or room 207, McConnell Hall.

374 — PERSONAL

If u cn eat ths come write for the Daily! What makes love last? Find out at the Mar-

riage Preparation Workshop. Run by counselling and chaplaincy in November. Call 392-5118 or 5890 before October 31.

Yng. gdlkg. GWM cpl. still sks. same or sngl. Ph./ph. to "Couple" c/o Arts 305 (internal mail). (see Oct 24 Daily)

Jeremy: your felalet is in the frying pan. Be careful! Bog

This is Be Kind To Terry MacGregor Week. Have you been nice to Terry today??

IAN SIMMONS—Please contact Colin Tomlins at Daily Typesetting (8959) regarding an outstanding bill for last year's Douglas Hall Yearbook.

Michael—Where are you?! I feel like I've been stuck in a closet for weeks. Forget Elaine, she's getting plenty. I need you!! Desperately yours, Big & Bad.

Elaine—O.K. Andrew and Michael were fine. But who's Jaggerlips? And what the hell's going on with David?! What about me?! You're breakin' my heart, klddo. Love, You know who

383 — LESSONS OFFERED

Flute and recorder lessons, cours de flûte traversière et de flûte à bec. Theory, rhythm, for beginners or advanced. Call 388-5164.

385 — NOTICES

Eating Disorders. Women with eating disorders you are not alone. If you wish to participate in a self-help group starting Nov. 4—Please contact Tricia at 844-1845, Evelyn at 271-7325 or The Women's Union (392-8920) For more info.

Douglas Hall presents the 54th annual Halloween party, Friday, November 1! Come costumed and win prizes! \$1 cove without costumes. Johnny Salamander says be there!!

Martinique, Martinique, Martinique, from \$699.00, \$699.00, \$699.00, + tax. From Dec. 28 to Jan 4 or Jan 11. In association with Nouvelles Frontières. Call Steve. 488-2963.

Free ice time: Goaltenders needed for Instructional Hockey classes. Wednesdays 14:00-15:15 or 15:15-16:45. Call 392-4737

387 — VOLUNTEERS

Male volunteer needed to visit elderly men in nursing in Côte-St-Luc once a week. Call Community McGill 392-8937 or drop by the office Union 408.

Volunteers needed for research in diabetes. Involves one hour of time and blood sampling. Interesting project and some remuneration. Call Dr. Fantus, McGill, 392-4911

391 — GARAGES FOR RENT

Garage For Rent. Close to University; just off Aylmer. Available until April. Ideal for winter storage of your car. Call Alex at 843-6722.

392 — PARKING SPACES

Parking spaces available immediately during daytime at Pine and Aylmer. Avoid those parking tickets and long walks to school!! Call Alex 843-6722.

Parking. Snow cleared, safe, near to McGill. \$37.50/month. Call 849-8241 pr 843-8920.

Really, really important DailyBoard of Directors meeting today at noon in Union B03. Be there or Ken will give you an enema with a silver spoon, (it hurts more). Democracy day for Dailyites tomorrow at 5pm.



Public Service Commission
of Canada

Commission de la Fonction
publique du Canada

To the Class of 1986

We are recruiting university graduates with degrees in the following areas:

Administration
Commerce
Computer Science
Consumer Studies
Criminology
Economics
Engineering
Library Science
Mathematics/Statistics

Pick up your copy of the "Employment Opportunities for University Graduates - 1986" publication at your campus placement office or at an office of the Public Service Commission of Canada.

* Criminology graduates are invited to apply, using the "ES" - Economics and Statistics group choice.

Competition 86-4000

Closing date: Friday, November 1, 1985

Date of Financial Administration Test of Technical Knowledge:
Thursday, November 7, 1985 at 19:00 hours.

Please ask your placement office about the exam location.

PLEASE NOTE:

The Public Service Commission and the Department of External Affairs wish to announce that there will be no Foreign Service Officer recruitment competition in 1985. The next competition is scheduled for the fall of 1986.

The Public Service of Canada is
an equal opportunity employer

Canada

THE WAKE



8:30 to 2 am
Union Ballroom

**Prizes for the best costume
Happy Hour**

brought to you by
The McGill Network



College season pass - Ski one of the world's top resorts.

- \$300
- Unlimited 7-day use (excluding 12/26-12/31/85 and 2/15-2/17/86)
- Can ski excluded days with a special \$18 lift ticket

The College Season Pass may be purchased by any full-time undergraduate college student. Proof of enrollment and valid picture ID are required.

With the College Season Pass, this year you can ski Stowe, one of the ten top ski resorts in the world.

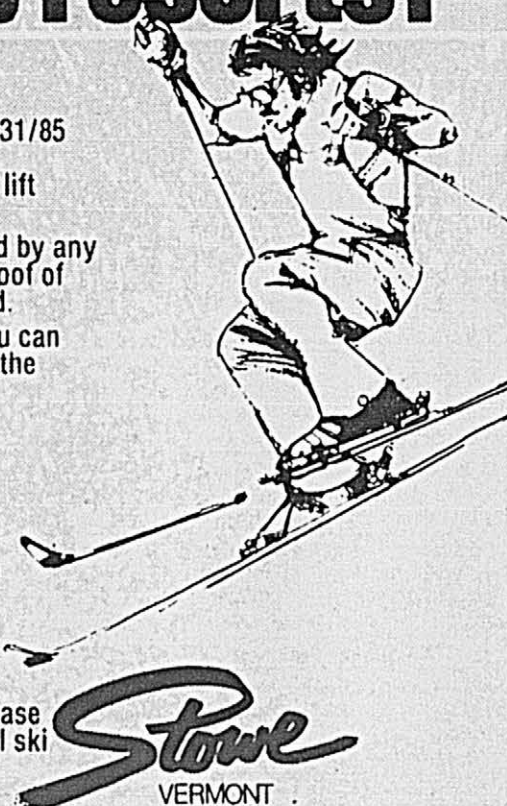
Stowe offers:

- A two mountain complex including Mt. Mansfield, Vermont's highest peak
- The legendary Front Four
- Great intermediate cruising trails

And we've developed some new touches to increase your skiing pleasure:

- New triple lift
- New trails (16 additional acres)
- New snowmaking on many trails

To purchase your College Season Pass, please contact your college representative, a local ski shop or call our Season Pass Office at 802-253-7311.



McGill Students' Society Elections

**POLLS WILL BE LOCATED AS
FOLLOWS:**

ADVANCE POLLS:

Wed, Oct 30th, 1985 10:00 am-4:00 pm

- 1) Bishop Mountain Hall (4:00-7:00 pm)
- 2) Royal Victoria College (11:00 am-2:30 pm)
- 3) Bronfman
- 4) Burnside Hall
- 5) Education
- 6) Leacock
- 7) McConnell Engineering
- 8) Thomson House (4:00-7:00 pm.)
- 9) Strathcona Anatomy and Dentistry
- 10) Union
- 11) Dental Clinic (Montreal General Dental Clinic) 11:00-2:30
- 12) Birks

REGULAR POLLS:

Thursday Oct. 31st, 1985 10:00 am-4 pm

- 1) Arts
- 2) Bronfman
- 3) Burnside
- 4) Chancellor Day Hall
- 5) Leacock
- 6) McConnell Engineering
- 7) McIntyre
- 8) Redpath Library
- 9) Stewart Biology (South Block)
- 10) Strathcona Music
- 11) Union
- 12) Wilson